MODEL 149-30

DC HIGH VOLTAGE DIGITAL VOLTMETER

INSTRUCTION MANUAL

KIKUSUI ELECTRONICS CORPORATION

Power Requirements of this Product

Power requirements of this product have been changed and the relevant sections of the Operation Manual should be revised accordingly.
(Revision should be applied to items indicated by a check mark ☑.)

☐ Input voltage

The input voltage of this product is _____ VAC,
and the voltage range is _____ to _____ VAC. Use the product within this range only.

☐ Input fuse

The rating of this product's input fuse is _____A, _____VAC, and _____.

WARNING

- To avoid electrical shock, always disconnect the AC power cable or turn off the switch on the switchboard before attempting to check or replace the fuse.
- Use a fuse element having a shape, rating, and characteristics suitable for this product. The use of a fuse with a different rating or one that short circuits the fuse holder may result in fire, electric shock, or irreparable damage.

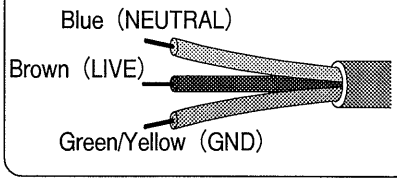
☐ AC power cable

The product is porvided with AC power cables described below. If the cable has no power plug, attach a power plug or crimp-style terminals to the cable in accordance with the wire colors specified in the drawing.

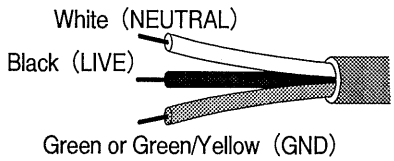
WARNING

- The attachment of a power plug or crimp-style terminals must be carried out by qualified personnel.

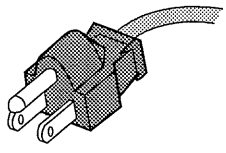
☐ Without a power plug



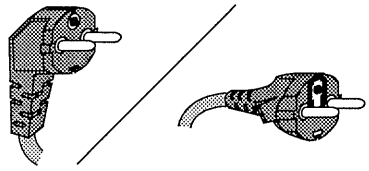
☐ Without a power plug



☐ Plugs for USA



☐ Plugs for Europe



☐ Provided by Kikusui agents

Kikusui agents can provide you with suitable AC power cable.
For further information, contact your Kikusui agent.

☐ Another Cable _____

 Kikusui Part No. Z9-000-027 IB001681

KIKUSUI

TABLE OF CONTENTS

1. GENERAL

Kikusui Model 149-30 DC High Voltage Digital Voltmeter accurately measures high voltages up to ±30 kV and digitally displays the measured value. Featured with as high input resistance as 1000 MΩ, the digital voltmeter is ideal for measurement of high voltage supply circuits of television receiver sets and high voltage DC power supplies.

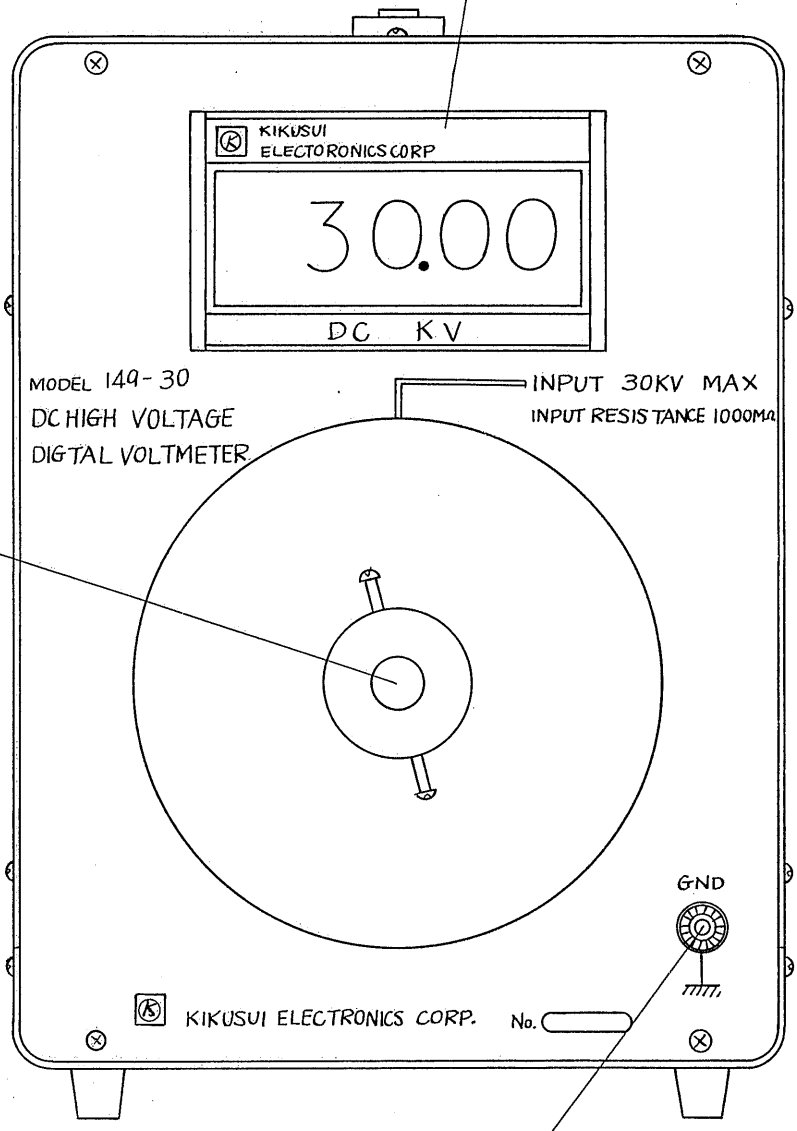
2. SPECIFICATIONS

External dimensions:	203 W x 273 H x 313 D mm	
(Maximum dimensions:	207 W x 295 H x 383 D mm)	
Weight:	Approx. 5.8 kg	
Accessories:	Input terminal cover	1
	Hex. wrench	1
	Instruction manual	1
	Test data	1
Power requirements:	100 V ±10% AC, 50/60 Hz, approx. 10 VA	
Maximum measurement voltage:	±30 kV DC	
Input resistance:	1000 MΩ ±2%	
Accuracy:	±(0.5% rdg + 1 digit)	
Display:	Numeric value ...	Digital readout tubes, maximum numeric value 29.99
	Polarity	Negative polarity sign alone is displayed when required.
	Overflow	When 29.99 is exceeded, the display is fixed at 30.00.
Sampling rate:	8 samples/sec	
Environmental conditions:	Ambient temperature	5°C ~ 35°C
	Humidity	75% R.H. maximum

3. OPERATING PROCEDURE

3.1 EXPLANATION OF THE FRONT PANEL

Digital Voltmeter Unit:
Displays the measured voltage.



INPUT:
The high voltage line of measured voltage source is connected to this terminal.

GND Terminal:
Connected to the low voltage line of measured voltage source and to the earth ground.

3.2 EXPLANATION OF THE REAR PANEL

RATIO ADJ: Semi-fixed resistor for adjustment of voltage dividing ratio of the resistance voltage divider.

3.3 DC VOLTAGE MEASUREMENT

(1) Connect the GND terminal of the front panel to an earth ground.

(2) Turn off the power of the measured voltage source. Connect securely the low voltage line of the measured voltage to the GND terminal of Step (1) above. Thus the low voltage line of the measured voltage source is shorted to the earth. Ensure that this does not cause any problem to the measured voltage source.

(3) Connect securely the high voltage line of the measured voltage to the INPUT terminal of the voltmeter using a well insulated cable (polyethylene covered cable, for example) and using the input terminal cover (supplied as an accessory).

(4) Connect the AC power cord of the digital voltmeter to an AC line receptacle. Allow more than 15 minutes of warm-up period. The digital readout will display "00.00".

(5) Turn on the power of the measured voltage source. As the measured voltage is applied to the voltmeter, the digital readout displays the voltage of the measured voltage source directly in digital value. The polarity is indicated only when it is negative. (For details, refer to the instruction manual of the Series 142 Panel Meter.)

3.4 PRECAUTIONS

(1) The voltmeter deals with high voltages. Be extremely careful not to touch the sections where the high voltages are exposed.

(2) Connection between the digital voltmeter and the measured voltage source must be securely made, not only for the high voltage line but for the low voltage line also. Note that, if the low voltage line is disconnected, the digital voltmeter may be permanently damaged and electric shock hazard may be caused if your touch the housing with your hand under such state.

(3) The input impedance of the digital voltmeter is 1000 MΩ ±2%. When the voltmeter is connected to a measured voltage source of 25 kV, the voltmeter draws a current of approximately 25 μA from the voltage source. If the internal impedance of the voltage source is very high, this current will cause an internal voltage drop and the value indicated by the voltmeter will include a substantial error. In such a case, compensation must be made for the internal voltage drop of the voltage source, to know the true voltage of the voltage source.

(4) The digital voltmeter should be used within the limits of the specified environmental conditions. The voltmeter must be serviced and calibrated periodically -- once a year at least. When the voltmeter is serviced, wipe thoroughly with a clean dry cloth the INPUT terminal and its vicinity and the surfaces of the insulators after pulling out the chassis from the housing, in order to completely remove dust and dirt from these high voltage components. The voltmeter should be serviced more frequently if it is operated in such a state that it is left for long periods with high voltages being applied to it causing the high voltage components to collect dust or if it is operated in dusty atmosphere.

(5) The BCD output and print command output of the digital voltmeter may be used when a printer or a pen recorder is required to be driven for aging test of the measured voltage source, for example. Details of connection methods will differ by types of printers and pen recorders used. For details, please contact our representative in your area.

4. MAINTENANCE

4.1 ADJUSTMENT OF "RATIO ADJ" CONTROL (Mounted on the rear panel)

(1) Clean the surfaces of the high voltage components as described in Step (4) of Sub-section 3.4 "PRECAUTIONS."

(2) Calibrate the digital voltmeter unit referring to Section "CALIBRATION" of the Instruction Manual for the Model 142 Panel Meter.

(3) Connect a standard DC high voltage source to the digital voltmeter and apply a voltage of +30 kV ±0.05%. Adjust the RATIO ADJ control so that the value displayed by the digital readout gradually varies from a lower value towards 30.00 and set the control in the position where the displayed value changes from 29.99 to 30.00. By this procedure, the digital voltmeter is accurately calibrated.

4.2 CALIBRATION OF DIGITAL VOLTMETER

Refer to the instruction manual of Series 142 Digital Panel Meter.